

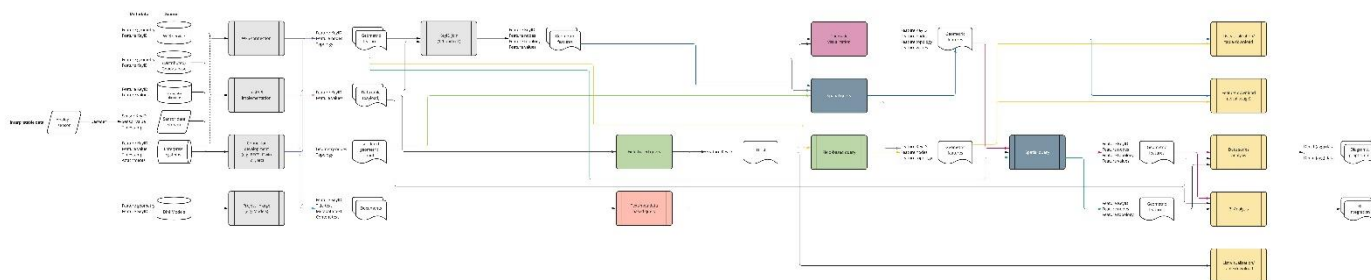
## Software Lab:

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| Modeling:    | <div style="width: 100%; height: 10px; background-color: #005596;"></div> |
| Mathematics: | <div style="width: 100%; height: 10px; background-color: #005596;"></div> |
| Programming: | <div style="width: 100%; height: 10px; background-color: #005596;"></div> |
| Science:     | <div style="width: 100%; height: 10px; background-color: #005596;"></div> |

# Geospatial Overlays - Generating Spatial Data Selections for Enhanced Usability

## Description

Generating reusable spatial data selections from geospatial and Building Information Modeling (BIM) datasets addresses a critical need in city policy-making, planning, and operations. Current workflows are often time-intensive and prone to errors due to reliance on manual efforts or secondary datasets. This project focuses on developing a geospatial overlays framework that simplifies the creation of customized spatial data subsets. These overlays will be usable for dashboards, reports, visualization, and data exports. Leveraging Bentley's iTwin Experience and iTwin Platform, the framework will achieve interoperability and scalability across various domains, such as urban planning, engineering, and policy-making.



## Task

- Perform a literature review to identify state-of-the-art tools and methods for geospatial data processing and overlays, while analyzing challenges in spatial data usability.
- Use geospatial and BIM datasets (supplied by Bentley) relevant to city operations and planning. Ensure integration from formats like Geospatial Data and BIM models to maintain compatibility and scalability.
- Adapt and implement existing algorithms using tools like the iTwin Platform, PostGIS, and other relevant libraries to ensure their applicability to the project's goals. Develop functionalities to export overlays for dashboards, reports, and visualization tools.
- Test and validate the framework using agreed criteria with Bentley. Conduct usability testing, gather stakeholder feedback, and iteratively improve the solution to meet user needs. Students will present the validation results as part of the project.
- Deliver project updates through intermediate presentations. Prepare a final presentation, scientific poster, and comprehensive documentation to summarize the framework's outcomes.

## Supervisor

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## References

<https://postgis.net/>

<https://developer.bentley.com/>

<https://www.bentley.com/software/itwin-platform/>